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Florida HEALTH

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Vision: To be the **Healthiest State** in the Nation

Investigation of Pesticide Poisoning Among Farmworkers – Palm Beach County, FL

November 16, 2015

Background

On October 16, 2014, the Florida Department of Health (DOH) in Palm Beach County was contacted by Lakeside Medical Center in Belle Glade to report a cluster of pesticide-related illness and injury cases. Thirteen farmworkers went to the emergency department (ED) following exposure to a pesticide while working in a celery field. A fumigation airplane was spraying Baythroid® XL (Environmental Protection Agency [EPA] Registration Number 264-840) in a nearby field. Farmworkers experienced nausea, vomiting, and eye irritation among other symptoms around 9:40 am on October 16, 2014. The Florida Department of Agriculture and Consumer Services (DACS) were also notified of the incident. The EPA defines pesticide drift as the "physical movement of a pesticide through air at the time of application or soon thereafter, to any site other than that intended for application."

Baythroid® XL contains 12.7% of beta-cyfluthrin as the active ingredient. This is a type II pyrethroid used as an insecticide. Pyrethroid pesticides are synthetic derivatives of natural pyrethrin insecticides. Low dose exposure to pyrethroids can result in paresthesia, erythema, dizziness, headache, fatigue, irritability to sound and touch, and skin, eye, upper respiratory tract, and gastrointestinal irritation. Symptoms typically resolve within 24 to 48 hours in the absence of continued exposure.

The Safety Officer of the company managing the farmworker crew reported that around 50 farmworkers were present in the field on October 16. All the farmworkers were part of a crew that works for a contractor. The company interviewed the workers and offered immediate transport to the hospital. Only 13 workers went to the hospital and were decontaminated with soap and water at the hospital. Eleven workers were released the same day. Two had chest pain and were kept overnight for observation.

Acute pesticide-related illness and injury (poisoning) is a reportable condition under section 381.0031, Florida Statutes and Chapter 64D-3, Florida Administrative Code. All physicians, laboratories, and other health care providers are required to report acute pesticide poisonings to DOH.

Methods

DOH in Palm Beach County started a public health investigation immediately after notification on October 16 with the help of the DOH Pesticide Poisoning Investigator (PPI). Of the 13 farmworkers that went to the hospital, five were interviewed over the phone within a week of exposure and eight were interviewed in-person within about two weeks after the incident. Demographic, pesticide exposure, and health effect information was collected using a standard questionnaire. The PPI attempted to contact the remaining farmworkers that were reported to be in the field at the time of the incident and did not go to the hospital. Two of these farmworkers were located and visited but did not provide any additional information about their health effects. Medical records for all farmworkers who sought medical care were obtained from the hospital and a local medical provider's office.

All available information for each interviewed individual was reviewed to classify cases based on the DOH surveillance case definition and severity of illness classification (details given below). This step

determines whether health effects were consistent with what would be expected following exposure to Baythroid® XL. The Safety Data Sheet (SDS) for Baythroid® XL (available at http://www.agrian.com/pdfs/Baythroid_XL_MSDS2.pdf) was used to identify the expected health effects.

DACS initiated investigation on October 16, 2014, immediately after the first report from the Safety Officer. DACS investigation reports were reviewed for information about the pesticides used, dates and locations of application, violations (including Worker Protection Standard [WPS]), and environmental (soil) sampling.

DOH has adopted guidelines from the National Institute of Occupational Safety and Health's (NIOSH's) Sentinel Event Notification System for Occupational Risk (SENSOR) program to classify cases. A detailed explanation of DOH surveillance case definition can be found at http://www.floridahealth.gov/diseases-and-conditions/disease-reporting-and-management/disease-reporting-and-surveillance/_documents/cd-pesticide.pdf. A case was defined as confirmed, probable, or suspect based on information regarding their exposure, health effects, and the causal relationship between reported symptoms and the specific pesticide exposure. Severity of illness was determined using the same guidelines and was based on the reported symptoms, number of days hospitalized, or the number of days absent from work or normal activities. Severity of illness was categorized as death, high severity, moderate severity, or low severity. More information about guidelines for classifying cases and severity can be found on the NIOSH website at http://www.cdc.gov/niosh/topics/pesticides/case.html.

Information used to summarize the investigation in this report include age, gender, race, ethnicity, presence of pre-existing conditions, medical care, health effects, case classification, and severity of illness. Race and ethnicity was categorized as Hispanic vs. non-Hispanic. Health effects were grouped into broader organ systems.

Results

DOH investigated the drift incident. All 13 people interviewed met the case definition for a confirmed case of acute pesticide-related illness and injury. Six cases (46.2%) were determined to be of moderate severity and seven (53.8%) of low severity. Twelve cases (92.3%) were in females, ages ranged from 22 to 45 years. All cases were Hispanic, some were bilingual, but most were Spanish speaking. None of the interviewed individuals reported having pre-existing conditions. The most common symptoms reported included nausea, vomiting, eye irritation, headache, dizziness, and numbness on the mouth, tongue, or face (Table 1). Seven cases (53.8%) recovered within a day of the incident. The remaining six cases (46.2%) continued to have numbness, dizziness, and headache two weeks after their exposure.

According to the farmworkers, the airplane made several applications to a neighboring field (five to eight flyovers) and workers were exposed to the pesticide for at least 15 minutes.

The DACS investigation did not identify any label violation involving the application of Baythroid® XL. A WPS inspection was also conducted and no violations were found. Soil samples collected during the investigation found other chemicals but did not identify beta-cyfluthrin (active ingredient of Baythroid® XL).

Table 1. Characteristics of acute pesticide-related illness and injury cases in Palm Beach County – Florida, 2014 (n=13)

Characteristics	Number	Percent
Age group (years)		
<20	0	0.0
20-29	7	53.8
30-39	4	30.8
40-49	2	15.4
≥50	0	0.0
Gender		
Female	12	92.3
Male	1	7.7
Race/Ethnicity		
Non-Hispanic	0	0.0
Hispanic	13	100
Health Effects		
Neurological	13	100
Headache	11	84.6
Numbness on mouth, tongue, or face	11	84.6
Dizziness	9	69.2
Skin	3	23.1
Burning sensation	3	23.1
Gastrointestinal	12	92.3
Nausea	12	92.3
Vomiting	6	46.2
Abdominal pain	5	38.5
Altered taste in mouth	4	30.8
Ocular	10	76.9
Eye irritation	7	53.8
Blurred vision	3	23.1
Conjunctivitis	3	23.1
Respiratory	4	30.8
Wheezing	3	23.1
Shortness of breath	3	23.1
Cough	1	7.7
Asthma	1	7.7
Cardiac	3	23.1
Chest pain	3	23.1
Brachycardia	2	15.4
Other	1	7.7
Fatigue	1	7.7

Discussion

The investigation identified 13 confirmed cases of acute pesticide-related illness and injury due to drift following aerial Baythroid® XL application in a neighboring field, these farmworkers were immediately transferred to an ED and were decontaminated. However, the remaining farmworkers did not seek medical care and no information is available for them. The PPI attempted to reach out to these workers, but they were reluctant to talk about the incident. Some of the interviewed farmworkers mentioned to the PPI that people are afraid to talk about their exposure due to fear of losing their job. It is possible that some of the workers that did not seek medical care may have experienced health effects related to the pesticide exposure. Similarly, it is also possible that some self-reported symptoms might not have been related to pesticide exposure.

Pesticide applicators are required to use necessary preventive measures and to comply with label requirements to minimize pesticide drift. To avoid similar incidents of drift exposure, pesticide applicators should be alert and careful when doing aerial pesticide application close to non-target areas such as adjacent fields or houses. It is also important to comply with weather-related requirements and drift monitoring activities. DOH will share findings in this report with the Florida DACS and other partners (NIOSH, EPA) and will continue to conduct pesticide-related illness and injury surveillance and investigate any such incidents.

Two trainings have been developed with DOH: 1) A pesticide poisoning training for farmworkers to educate them about pesticide-related illness and injury and the role of DOH and 2) a training for physicians and nurses titled "Recognition, Management, and Reporting of Acute Pesticide Poisonings in Florida" to increase identification of pesticide poisonings and reporting to DOH. This training has been approved for 1.5 CME/CE credits and is available at: https://stellared.learningexpressce.com/index.cfm?fa=view&eventID=4190.

If people become sick after pesticide exposure, they should:

1. Seek medical attention from a physician or ED.
2. Call the Florida Poison Information Center Network (FPICN) at 1-800-222-1222. Trained staff can provide specific poison information and treatment recommendations related to the exposure.
3. Report health effects due to pesticide exposure to the local DOH county health department (contact information available here: http://www.Floridahealth.gov/CHDEpiContact) or the DOH pesticide surveillance hotline at 1-800-606-5810.


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